AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-34. (CANCELED)

35. (NEW) A method for inducing apoptosis in a eukaryotic cell comprising targeting a cell with a chimeric, bifunctional molecule, wherein the chimeric, bifunctional molecule modulates permeability transition pore complex (PTPC) activity of the eukaryotic cell.

36. (NEW) The method as claimed in claim 35, wherein the PTPC activity modulated by the chimeric, bifunctional molecule is opening or closing of the PTPC.

37. (NEW) The method as claimed in claim 35, wherein the chimeric, bifunctional molecule comprises a first functional molecule and a second functional molecule, wherein the first functional molecule targets the cell and the second functional molecule regulates apoptotic activity linked to the PTPC of the cell.

38. (NEW) The method as claimed in claim 37, wherein the first functional molecule targets and enters into a tissue cell.

39. (NEW) The method as claimed in claim 38, wherein the second functional molecule targets and induces death of the cells by apoptosis by regulating the opening or the closing of the PTPC, or a fragment of the PTPC, of mitochondria.

40. (NEW) The method as claimed in claim 38, wherein the chimeric, bifunctional molecule binds and enters the cell and has the formula:

Targ-Tox,

wherein Tox is a viral or a retroviral apoptotic peptide, a peptidomimetic, or a fragment of a protein that interacts with the PTPC of a eukaryotic cell to cause

apoptosis of the cell; and Targ is an antibody, an antibody fragment, a recombinant antibody fragment, M350/ScFv, V461/ScFv, a homing peptide, or any peptide of Table III.

41. (WITHDRAWN - NEW) The method as claimed in claim 39, wherein the bifunctional, chimeric molecule binds and enters the cell and has the formula

Targ-Save,

wherein Save is a viral, retroviral, or cellular antiapoptotic peptide, a peptidomimetic, or a fragment of protein that interacts with the PTPC of a eukaryotic cell to prevent apoptosis of the cell and wherein if the Save peptide is a viral peptide, Save is not vMIA protein of Cytomegalovirus; and wherein Targ is an antibody, an antibody fragment, a recombinant antibody fragment, M350/ScFv, a homing peptide, or any peptide of Table III.

42. (NEW) The method as claimed in claim 35, wherein the chimeric, bifunctional molecule further comprises a Mitochondrial Localisation Sequence (MLS), which targets the second functional molecule to a mitochondria or intermembrane space of a mitochondria.

43. (NEW) The method as claimed in claim 40 wherein Tox is chosen from the group of peptides of Table I.

44. (WITHDRAWN - NEW) The method as claimed in claim 41, wherein Save is chosen from the group of peptides of Table II.

45. (NEW) The method as claimed in claim 35, wherein the second functional molecule of the chimeric, bifunctional molecule interacts with ANT of the PTPC of mitochondria, wherein ANT is adenine nucleotide translocator isoforms 35, 36, or 37.

46. (WITHDRAWN - NEW) A chimeric, bifunctional molecule that can enter into a cell to induce or prevent death of the cell by apoptosis, wherein the chimeric, bifunctional molecule comprises a first functional molecule covalently linked to a second functional molecule, wherein the first functional molecule targets and enters into the cell and the second functional molecule targets and induces or prevents the death of the cell by apoptosis by regulating opening or closing of a permeability transition pore complex (PTPC) of mitochondria or a fragment of the PTPC.

47. (WITHDRAWN - NEW) The chimeric, bifunctional molecule as claimed in claim 46, wherein the chimeric, bifunctional molecule binds and enters the cell and has the formula:

Targ-Tox,

wherein Tox is a viral or retroviral apoptotic peptide, a peptidomimetic, or a fragment of a protein that interacts with the PTPC of a eukaryotic cell and causes apoptosis of the cell, and Targ is an antibody, an antibody fragment, a recombinant antibody fragment, M350/ScFv, V461/ScFv, a homing peptide, or any peptide of Table III.

48. (WITHDRAWN - NEW) The chimeric, bifunctional molecule as claimed in claim 46, wherein the chimeric, bifunctional molecule binds and enters the cell and has the formula:

Targ-Save,

wherein Save is a viral, retroviral, or cellular antiapoptotic peptide, a peptidomimetic, or a fragment of protein that interacts with the PTPC of a eukaryotic cell to prevent apoptosis of the cell, and wherein if Save is a viral peptide, Save is not vMIA

protein of Cytomegalovirus, and wherein Targ is an antibody, an antibody fragment, a recombinant antibody fragment, M350/ScFv, a homing peptide, or any peptide of Table III.

49. (WITHDRAWN - NEW) The chimeric, bifunctional molecule as claimed in claim 46, further comprising a mitochondrial localisation sequence (MLS), which targets the second functional molecule to mitochondrial membranes or intermembrane space.

50. (WITHDRAWN - NEW) The chimeric, bifunctional molecule as claimed in claim 47, wherein Tox is chosen from the group of peptides of Table I.

51. (WITHDRAWN - NEW) The chimeric molecule as claimed in claim 48, wherein Save is chosen from the group of peptides of Table II.

52. (WITHDRAWN - NEW) The chimeric molecule as claimed in claim 47, wherein the Targ and Tox peptides are covalently bonded through a peptide linker comprising 3 to 18 amino acids.

53. (WITHDRAWN - NEW) The chimeric molecule as claimed in claim 48, wherein the Targ and Save peptides are covalently bonded through a peptide linker comprising 3 to 18 amino acids.

54. (WITHDRAWN - NEW) A vector encoding a chimeric, bifunctional molecule as claimed in claim 46.

55. (WITHDRAWN - NEW) A recombinant host cell comprising a vector as claimed in claim 54.

56. (WITHDRAWN - NEW) A cancer cell having a tumor associated antigen on the surface thereof to which is bound the chimeric molecule as claimed in claim 46.

57. (WITHDRAWN - NEW) A hybridoma deposited at the National Collection of Culture and Microorganism (C.N.C.M.) under the accession number n° I 2617.

58. (WITHDRAWN - NEW) A purified monoclonal antibody produced by the hybridoma as claimed in claim 57.

59. (WITHDRAWN - NEW) A method of determining the presence of a cancer cell having a tumor-associated surface antigen in a biological sample of interest comprising :

(A) contacting the biological sample with a chimeric, bifunctional molecule as claimed in claim 46 under conditions permitting binding between the chimeric, bifunctional molecule and the antigen on the surface of the cancer cell;

(B) detecting the binding; and,

(C) optionally, quantifying the binding detected in step (B).

60. (NEW) A method for inducing death by apoptosis in a tumor cell or viral infected cell in a biological sample of interest, wherein the tumor cell or infected cell has a tumor-associated antigen on the surface, the method comprising:

(A) contacting the biological sample of interest with a chimeric, bifunctional molecule as claimed in claim 46 under conditions permitting the binding between the chimeric, bifunctional molecule and the antigen on the surface of the cancer cell; and,

(B) incubating for a time sufficient to allow entry of the chimeric, bifunctional molecule into the cell and induce cell death by apoptosis.

61. (NEW) A method for inducing death by apoptosis in a tumor cell or viral infected cell in a biological sample of interest, wherein the tumor cell or infected cell has a tumor-associated antigen on the surface, the method comprising:

(A) contacting the biological sample of interest with a chimeric, bifunctional molecule as claimed in claim 50 under conditions permitting the binding between the chimeric, bifunctional molecule and the antigen on the surface of the cancer cell; and,

(B) incubating for a time sufficient to allow entry of the chimeric, bifunctional molecule into the cell and induce cell death by apoptosis.

62. (WITHDRAWN - NEW) A method of preventing cell death by mitochondrial apoptosis in a cell of interest, the method comprising:

(A) contacting a biological sample of interest with a chimeric molecule as claimed in claim 51 under conditions permitting binding between the chimeric molecule and the cell of interest; and,

(B) incubating for a time sufficient to allow entry of the chimeric molecule into the cell of interest and prevention of cell death by apoptosis.

63. (WITHDRAWN - NEW) The method of preventing cell death as claimed in claim 62, wherein the cell of interest is a neuron, cardiocyte, or hepatocyte.

64. (WITHDRAWN - NEW) A method for identifying an agent that interacts with a PTPC comprising:

(A) contacting a biological sample containing cells with the PTPC with a chimeric, bifunctional molecule as claimed in claim 46 in the presence of a candidate agent;

(B) comparing the binding of the chimeric peptide to the PTPC in absence of the candidate agent; and,

(C) optionally, testing the activity of the selected agent on a preparation of a cellular extract comprising subcellular elements of the PTPC.

65. (WITHDRAWN - NEW) A method for identifying an active agent of interest that interacts with ANT peptide of PTPC comprising:

(A) contacting a biological sample containing cells with ANT peptide of PTPC with a chimeric, bifunctional molecule as claimed in claim 46 in the presence of a candidate agent; and

(B) comparing the binding of the chimeric peptide with the ANT peptide of the PTPC in absence of the agent.

(C) optionally, testing the activity of the selected agent on a preparation of a cellular extract comprising subcellular elements with the ANT peptide of the PTPC.

66. (WITHDRAWN - NEW) A method of identifying a mitochondrial antigen, comprising interacting the antigen with a macromolecule, molecule, or peptide comprising Tox as claimed in claim 47.

67. (WITHDRAWN - NEW) A method of identifying a mitochondrial antigen, comprising interacting the antigen with a macromolecule, molecule, or peptide comprising Save as claimed in claim 48.

68. (WITHDRAWN - NEW) A method of treatment or of prevention of a pathological infection or disease comprising administering to a patient a pharmaceutical composition comprising a chimeric, bifunctional molecule as claimed in claim 46.

69. (WITHDRAWN - NEW) A pharmaceutical composition comprising a chimeric, bifunctional molecule as claimed in claim 46.